Patent claims

1. A method for producing compressed, plastic-coated fibers or rovings, consisting of substantially parallel filaments, starting from rovings consisting of plastic-coated filaments, characterized in that rovings, or a plurality of such rovings as a composite, consisting of substantially parallel filaments on which the plastic applied, optionally as a powder, is present in the molten or liquid state, are passed, after the coating, through a rotating device by means of which local rotation of the fibers is executed so that the individual threads in the method are twisted with one another in the form of rotations, starting from the rotating device, backward along the threads in the direction of the coating device, it being the case, however, that after passing through the rotating device there are no longer any rotations or there are rotations only to a small extent, so that, after passing through the rotating device, the filaments have no spiral revolutions per meter or only a small number thereof and are arranged substantially parallel and linear or straight.

2. The method as claimed in claim 1, characterized in that the rotating device consists of a rotating sizing die.

3. The method as claimed in claim 1 or 2, characterized in that thin threads are produced.

4. The method as claimed in any of claims 1-3, characterized in that the rovings obtained are subsequently coated in a subsequent coating procedure additionally with mineral powders or metal powders at temperatures above the melting point of the coating polymer, or with plastic, op-

tionally as a mixture with mineral powders, and then hardened or allowed to solidify.

5. The method as claimed in any of claims 2-4, characterized in that the sizing die is rotated at such a high speed that all excess coating material is spun off at the die edge.

6. The method as claimed in claim 5, characterized in that the rotating sizing die is fixed in a hollow shaft and rotated together with this solid shaft, preferably at a speed of at least 500 revolutions per minute (rpm), preferably at least 2000 rpm, preferably at least 7000 rpm, and preferably at about 10 000 rpm.

7. The method as claimed in any of claims 2-6, characterized in that the sizing die is heated to at least the melting point of the fiber coating, and the polymer coating of the fiber is in the heated liquid state.

8. The method as claimed in any of claims 2-7, characterized in that a plurality of rotating sizing dies are connected in series and the fibers are passed through these devices and thus sized and compressed.

9. The method as claimed in any of claims 2-7, characterized in that the sizing die has an internal diameter in the range of 100-2000 µm, preferably in the range of 150-600 µm and in particular in the range of 200-350 µm, preferably 200-240 µm.

10. The method as claimed in any of claims 1-8, characterized in that the roving has about 5 to 50 spiral revolutions per meter, preferably about 10 to 30 spiral revolutions

per meter, preferably about 10 to 20 revolutions per meter, before the first rotating device, backward in the direction of the coating device.

11. The method as claimed in any of claims 1-9, characterized in that, after leaving the rotating device, the roving consists of substantially parallel filaments which preferably have about 3 to 10 revolutions per meter and preferably about 2 to 5 revolutions per meter.

12. The method as claimed in any of claims 1-11, characterized in that the fibers from which the rovings are formed are synthetic inorganic fibers, in particular glass fibers, C fibers, plastic fibers, in particular aramid fibers (aromatic polyamide), zylon fibers (PBO), preferably zylon 28 dtex, or natural fibers, in particular cellulosic fibers, and the filament thickness thereof is preferably 5 µm to 20 µm and about 100 tex-4800 tex (0.1 g/m-4.8 g/m), preferably 600 tex-2400 tex.

13. The method as claimed in any of claims 1-12, characterized in that the fibers are coated with at least one synthetic thermoplastic polymer having a softening point of 100°C or higher, preferably in the range from 140°C to 390°C and in particular in the range from 150°C to 350°C.

14. The method as claimed in any of claims 1-12, characterized in that the fibers are coated with at least one thermosetting plastic in the form of polycondensates, preferably curable phenol/formaldehyde plastics, curable bisphenol resins, curable urea/formaldehyde plastics, polyimides, BMI molding materials and polybenzimidazole (PBI); with at least one thermosetting plastic in the form of polyadducts, preferably epoxy resins, molding ma-

terials comprising unsaturated polyester resins, DAP resins, MF molding materials, preferably curable melamine/phenol/formaldehyde molding materials, or crosslinked polyurethanes.

15. The method as claimed in any of claims 1-14, characterized in that mineral, preferably crystalline, compounds, optionally as a mixture with further plastic, are applied in the subsequent coating, preferably inorganic compounds, preferably oxides, carbides, metal powders, preferably in powder form, preferably magnesium oxide, aluminum oxide, silicon carbide, substances of great hardness, preferably crystalline carbon, preferably diamonds, in particular industrial diamonds, the average particle size thereof being in the range of 5 µm-300 µm, preferably in the range of 10 µm-100 µm and in particular in the range of 10 µm-30 µm.

16. A thread, saw thread, tape, prepreg, fiber-reinforced plastic granule, fiber-reinforced shaped article, or fiber-reinforced pultruded or extruded profile produced as claimed in any of claims 1-15.

17. The use of the individual filaments produced as claimed in any of claims 1-15, or the corresponding individual rovings as a composite, for producing threads and saw threads and for producing tapes and prepregs, fiber-reinforced plastic granules and fiber-reinforced shaped articles or fiber-reinforced pultruded or extruded profiles and for fabrics which are woven from coated rovings and then optionally pressed.

18. A device for carrying out the method as claimed in any of claims 1-15, comprising at least one coating device (3)

for coating the roving or the rovings in the melt coating method or in the wet coating method or in the dry coating method, at least one IR oven (4) as a continuous device (for the wet and in the dry coating method) for fixing the coating, optionally a subsequent coating device (5), optionally associated with a further IR oven (4), and at least one conditioning device (9), consisting of a cooling device and optionally a heating device for final conditioning of the coated thread, characterized in that at least one rotating device (6) by means of which the rovings, or a plurality of such rovings as a composite, are compressed and preferably simultaneously sized is mounted in the region after the coating device (3) but before the conditioning device (9) and before any subsequent coating device (5) is present.